Distribution and Collecting Method of Fingerling Eeel (*Anguilla Sp*.) in Bengkulu Province

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ABSTRACT

Indonesia is an archipelago that is rich in resources eels (Anguilla Sp.). There are at least six types of eel, Anguilla mormorata, Anguilla celebensis, Anguilla ancentralis, Anguilla borneensis, and Anguilla bicolor, Anguilla pacifica. The types of eels are spread in areas bordering the deep sea. Nevertheless eels are not yet widely used economically. Whereas the eels in both, the size of the seed and the size for consumption are abundant. Bengkulu Province is located at latitude 2 16 '- 3 31' and 101 1 '- 103 41' E, which is located on the western edge of the island of Sumatera. Western parts of Bengkulu province directly dealing with the Indian Ocean with a coastline of about 525 km long. In the very long coastline it flows 134 rivers and creeks. Bengkulu province occupies most of the western slopes of the Bukit Barisan Mountains. In such areas generally have rivers shorter. In accordance with the topography is hilly and steep, generally torrential streams and rafting. The condition is an ideal habitat for eels. This study aims to determine the distribution and collecting method of fingerling eels in Bengkulu water body, especially rivers, as well as knowing the environmental conditions eel habitat. The method used in the study is the survey method, by direct observation in the field. Determination of sampling points is done by using purposive sampling method. The data obtained is processed and can provide information to do descriptive analysis activities. Based on survey results, been proved that eels live in almost all rivers in the province of Bengkulu. Identified three types of eels are generally caught by fishermen in Bengkulu, that Anguilla mamorata and Anguilla bicolor, also there is one kind of eels that live in the sand habitat (had not been identified). Anguilla bicolor has a habit of living in the torrential river wing. Anguilla mamorata has a habit of living in the murky waters and large rivers flow.

Key words: distribution, collecting, fingerling, and eels.

INTRODUCTION

Eels (*Anguilla spp*) is one type of fish that is sold in the international markets (Japan, Hong Kong, Netherlands, Germany, Italy and some other countries), thus this fish has potential as an export commodity. In Indonesia, the eels are found in areas bordering the sea in such southern coast of Java, Sumatra's west coast, the east coast of Borneo, Sulawesi coast, coastal islands of Maluku and West Irian. Unlike in other countries (Japan and European countries), in Indonesia eel fish resources have not been used, but these fish either in seed size and size is abundant consumption. Indonesia has at least six types of eel, *Anguilla mormorata, Anguilla celebensis, Anguilla ancentralis, Anguilla borneensis,* and *Anguilla bicolor bicolor, Anguilla bicolor pacifica*. The types of fish are spread out in areas bordering the deep sea. Based on morphological and genetic studies reported that on the western coast of Sumatera, there are three types of eel namely *A. bicolor bicolor, A. marmorata and A. nebulosa nebulosa* (Aoyama *et al.,* 2009; Watanabe *et al.,* 2009; Sugeha *et al.,* 2008; Melta & Hirnawati, 2010, and Farajallah *et al.,* 2012).

In addition to having the potential export market, eel itself has high vitamin content. Hearts eel has 15,000 IU / 100 gram high content of vitamin A. More than the content of vitamin A butter which only reached 1,900 IU / 100 gram. Even the content of eel 1,337 mg DHA / 100 grams of salmon beats recorded only 820 mg / 100 g or mackerel 748 mg / 100 g. While the EPA content eels reach 742 mg / 100 g, far above the salmon were only 492 mg / 100 g and mackerel were only 409 mg / 100 g. With these facts, breeding eels in addition to having a promising market could also provide nutritional assurance to those who consume them. The utilization rate of eel locally (in the country) is still very low, due to not many knew this fish, so most of Indonesia's population is not familiar to consume eel (Sarwono, 2012).

That resources eel whose existence is abundant can be used optimally, it is necessary strategic steps that begins by identifying areas that have the potential resources of eel (seed and size of consumption) continued with efforts utilization both for local consumption and for export purposes.

The purpose of this study is creating an inventory of potential resources of the river eel in water river of Bengkulu Province, especially on: (a) Knowing the distribution and abundance of eels in river waters Bengkulu Province, (b) Knowing the variations of fishing gear and environmental conditions river eel habitat in the Bengkulu Province.

MATERIALS AND METHODS

The method used in the study of potential eel fishery resources is a survey method, by direct observation in the field. Determination of sampling points is done by using purposive sampling method. The data obtained is processed and can provide information that conducted descriptive analysis activities. Stages in the implementation of the following:

- Data collection,
- Preparation and implementation of the field survey,
- Data analysis,
- Seminar,
- Preparation reports.

Primary data were obtained through direct data collection in the field, which includes conduct interviews and take photo for documentation. Secondary data were obtained from the agencies concerned. The survey was conducted in the year of 2013 and in seven coastal districts in the Bengkulu Province.

RESULTS AND DISCUSSION

Distribution of Eels in Bengkulu

Eel in Bengkulu spread from north to south with a different species. Eel in Indonesia has a different local name (according to areas), among others: uling, moa, lubang, lumbon, larak, pelus, gateng, lembu, denong, megaling, lara and lucah (Sarwono, 2007). However, in Bengkulu eel known as pelus. Based on survey results, one type of eel, which is unidentified only found in the River of District Kaur. The local name of the eel is 'serling'. In addition to the different species, the abundance of eel stage in each river in each district is different. In general, eel is found in some estuary rivers in 'elver' stage and adult stage. However, in some other rivers is common only catch in adult size. Glass eel can also be found in some rivers, namely Ketahun River (Sugeha *et al.*, 2015) and Manna River (Antoni, 2015). However, information on the glass eel in Bengkulu society is very rare.

Stadia development of eel are generally the same, either tropical or temperate, namely stadia Leptocephalus, stadia metamorphosis, stadia glass eel, elver, yellow eel and silver eel (adult) (Setiawan, 2003). That eel resources, abundant existence in the Bengkulu rivers, has to utilize optimally, it is necessary to develop strategic actions. The initial step begins to identify areas that have potential eel resources, and continued with efforts utilization either for local consumption or for the purpose export (Affandi, 2005).

Eel Fishing Gear in Bengkulu

Types of eel fishing gear in Bengkulu province are varies from north to south (Figure 1). There are several types of eel fishing gear that are often found during this survey, but there are also types of eel fishing gear that is only used in certain areas only. River conditions also determine the type and eel fishing methods developed in the community. Turbid river conditions that brought sandy silt material makes people use this type of fishing gear such as 'bubu' traps and 'gobyok'. However, the conditions are clear and rocky river with rushing streams, the public can use the fishing gear in the form of 'tembakan ikan' (gun), the 'tagang' (weir), 'bendung' (dam), and 'celurit' (hook).

In general during the survey was conducted, fishing gear such as fish traps are very common to catch eel. However there are some variations in the type of fishing gear to catch eel, such as in South Bengkulu in Manna River in form of "gobyok"; where as in Kedurang River, Padang Guci, and Kinal

River we can find a way of catching eels in a way stream. Furthermore, hook fishing gear that is only used in the Manula River in Kaur district used to catch 'sterling' eel.

Table 1. Distribution and stage of eel found in Bengkulu Province

District name	River name	Stage of eel
Kaur	Kinal	-
	Noman	*elver* and adult
	Kolek	*elver* and adult
	Manula	*glass eels*, *elver* and adult
	Padang guci	*glass eels*, *elver* and adult
Bengkulu Selatan	Air Manna	*elver* and adult
	Air Kedurang	*elver and adult*
	Air Sulau	*elver* and adult
	Air Bengkenang	*elver* and adult
	Air pino	*elver* and adult
Seluma	Air Maras	-
	Ngalam	*elver* and adult
Kota	Jenggalu	*glass eels, elver* and adult
Bengkulu Tengah		-
Bengkulu Utara	Lais	adult
	Ketahun	adult
	Seblat	adult
Mukomuko	Selagan	adult
	Penarik	adult

Note: Primer data (2013).

Bubu is one of static fishing gear, generally in the form of confinement, in the form of a trap. Where the eel will be easy entry cause attraction of bait but there is no way to escape. Materials used to make 'bubu' trap could be made from bamboo, rattan, wire, mesh, PVC, or plastic nets. Operation of gear traps in Bengkulu generally located in the bottom waters, surface waters, or in the river with a strong current. These tools tend to be selective because of the fish caught in it. In general, along watersheds in the Province of Bengkulu catch eel fishermen using fishing gear such as these kind of traps. Catches of eels using 'bubu' traps, also found that there are many sizes of eel caught from small to big (Ridwan, 2015).

Fishing line ('tagang') is one tentacle which consists of two main components, the rope and hook. Number of different hook, single hook, double hook, and even thousands. The principle of this fishing gear stimulate fish with natural or artificial bait that is attached to the hook. However, according to its type can be equipped also other components such as: stalk (pole), weight, float (float), and swivel. The way to operate, usualy installed settle on a body of water, washed away, and immediately stretched by hand. These tools tend very selective.

Fishing gear on the picture above is called by the people of South Bengkulu is 'gobyok'. In principle this fishing gear just like a fishing rod, but does not have a hook, so that there can injure eel. As bait in fishing gear is a worm this 'gobyok', strung together with fishing line, so that there are worms in the fishing line. Operation of fishing gear is carried out only at night approximately at 6:00 p.m. to 8:00 pm, when eels is active (nocturnal). Component of this fishing gear is a hook, fishing line, pole, nets, and so forth. At the time of catching eels, carried out at night so had to use a flashlight. To overate the 'gobyok', it was inserted into the stream by means to 'gobyok' it or stear into the water. It causing the eel congregate and eat worms that covered fishing line. With the help of nets eel are biting worms were removed and put into container.

Shoot fish or gun ('tembakan ikan') is a tool consisting of a catcher, rubber, arrows, rifles and stalk. Catching up with guns generally done by diving in the clear river waters whith rocky streams. Knowledge about the behavior of eels in the river makes people think to catch eel this in a different way. Eel (*A. mamorata*) behavior that often inhabit the rock pile. Weir method is a method commonly used in the community South Bengkulu Province to collect all kinds of young fish and often get tillers eel (glass eel), generally areas that have a river that flows swift and rocky. Society piled stones that -

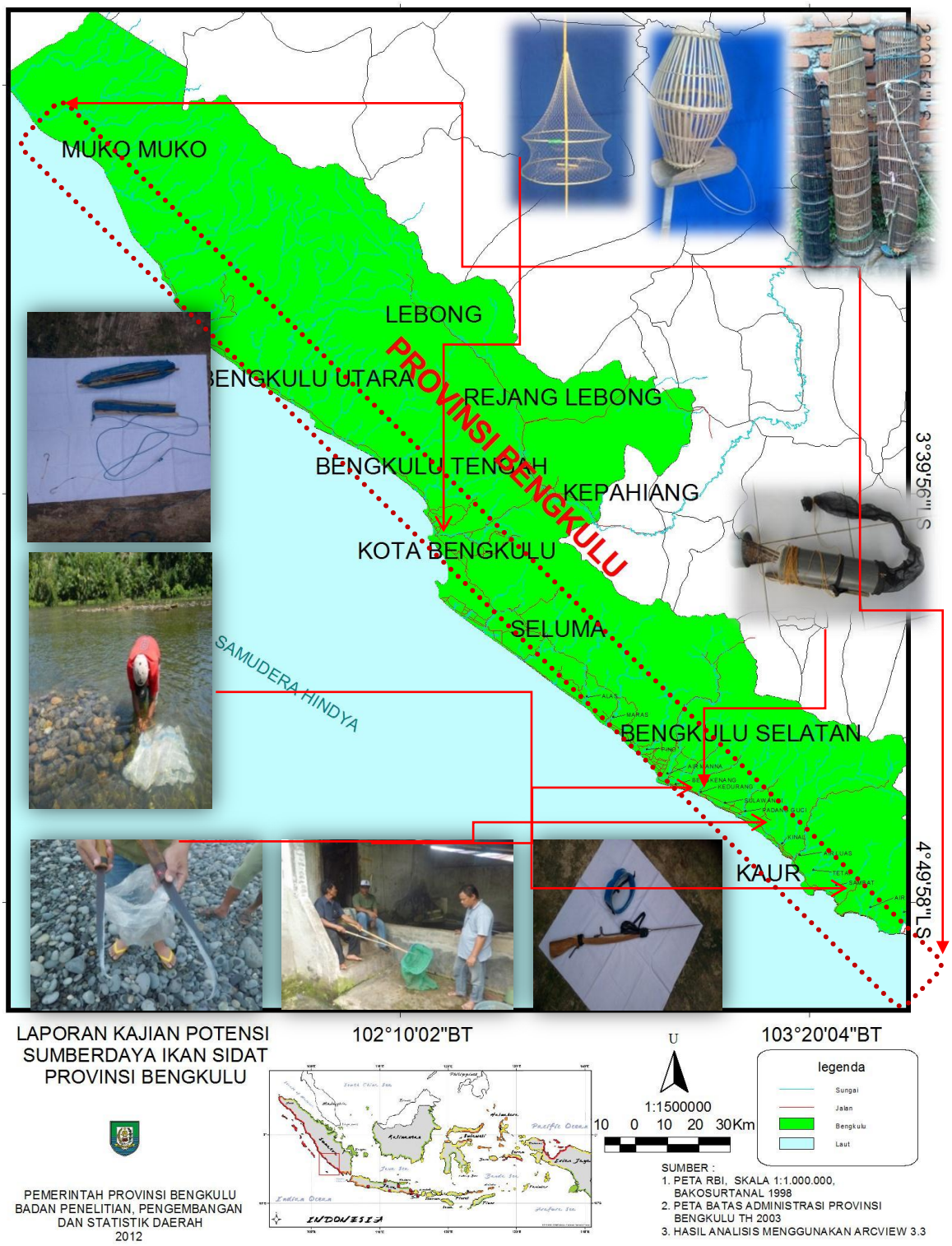

Figure 1. Types of eel fishing gear in Bengkulu

form the dam and left for a few weeks until the stone was mossy and estimated eel has occupied the stacked stones. After that people unload a pile of stones with the help of nets, sacks, 'tangguk' and so on. Other stem method, which makes track fish with stem. The dam (bendung) is made in such a way that the width and conical upstream to downstream, the fishermen make the river flow becomes more rapid and the downstream fish made grooves as lane entrance and at the edges in the given container as where the eel congregate. The dam herd all kinds of fish to get into the container because the migratory habits of eel like the river downstream of the upstream or vice versa.

Hook ('celurit') is the only fishing gear used to catch eels that are caught in sandy beach. The 'serling' eel habitat is on sandy beach. When the eel has been known and needed by the community, the activities eel fishing in public waters expected will increase. To manage that activity, so it is not destructive even threatening its sustainability, then from the beginning need introduced a simple fishing techniques and environmentally friendly. Similarly need informed to the fishing of eels about the dangers of over exploitation.

CONCLUSION

It has been demonstrated that eels can live in almost all rivers in the province of Bengkulu. Although, it abundance is still undetermined. The identification of eels showed that there is fishermen generally catch 3 types (species) of eels. In addition *Anguilla mamorata* and *Anguilla bicolor*, there is also a type of eel that lives in the sand habitat (serling).

The eel fishing gear (for consumption) usually in the form of rods, traps, and electric shock.

There is already a demand to supply of seedlings (aquaculture) of elver eel with the appropriate fishing gear (traps and gobyok). Fisherman who catches eel in general has been prepared for coordinated to collect elver eel. They are in hope of training techniques and arrest the buyers and price certainty.

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